



Bulletin 202 | 30 March 2009

The MalariaWorld 200th issue Draw is still open!

To celebrate this milestone we have organized a draw with **12 great prizes!**

1. Photo camera: 1 Pentax Optio M60 (10 Mb pixels) in a black leather case + a 2 Gb memory card, offered by Pentax Netherlands through Photo Van Beek
2. Journal subscriptions: 5 x 1 year online subscription to Acta Tropica or another parasitological journal, offered by Elsevier Publisher
3. Malaria Mosquito art: 1 superb Anopheles mosquito image on canvas size 50x70 cm, offered by Bugs in the Picture, Wageningen, The Netherlands
4. Mugs: 5 'End – Malaria' Blue Ribbon mugs, offered by the Malaria Foundation International

How to participate

For every new subscriber that you bring to MalariaWorld your name will be added to the draw. Here's how:

Open a new email. First, provide the **name**, **email address**, and **country** of the person you want to sign up. Below you write your own name and email address. Send your email to inga@malaria-world.com. Only current members can participate in the draw. You can sign up more than one person in one email (make sure you put your own name and email address last!) or send more emails. New email addresses will be verified. Terms and conditions of the draw are shown at the end of this email.

The winners will be announced in MalariaWorld – Issue 205. In case we draw winners from non-malarious countries we hope that these are willing to donate their prize to a colleague in a malaria-endemic country.

Publications

Open access | Pathways to malaria persistence in remote central Vietnam: a mixed-method study of health care and the community

Morrow M, Nguyen QA, Caruana S, Biggs BA, Doan NH, Nong TT
BMC Public Health 2009, 9:85 (23 March 2009)

This study in the central province of Quang Tri aimed to contribute to more effective malaria control in Vietnam by documenting the non-biological pathways to malaria persistence in two districts. Malaria control cannot be achieved through community education alone in this region. Whilst appropriate awareness-raising is needed, it is most urgent to address weaknesses at systems level, including bed-net distribution, health provider staffing and skills, as well as equipment and supplies.

Open Access | Research: Toll-like receptor polymorphisms in malaria-endemic populations

Jennifer A Greene, Ann M Moormann, John Vulule, Moses J Bockarie, Peter A Zimmerman, James W Kazura

Malaria Journal 2009, 8:50 (24 March 2009)

Paper describing the prevalence of various TLR polymorphisms in samples of different populations.

Open Access | Correspondence: RTS,S/AS01E Vaccine against Malaria

Gosling RD, Chandramohan D, Bejon P, Leach A, von Seidlein L

N Engl J Med, Number 12, March 19th 2009, Volume 360:1253-1254

The results of the trial reported by Bejon et al. (Dec. 11 issue),¹ in which the malaria vaccine RTS,S/AS01E was administered to children in Kilifi, Kenya, and Korogwe, Tanzania, are impressive. However, there are methodologic issues in the measurement of protective efficacy in sites where the transmission of malaria is falling. In such areas, transmission becomes overdispersed, and measuring protective efficacy against malaria over short periods may be inappropriate.² For example, the high protective efficacy of intermittent preventive treatment for malaria in infants that was observed in the first clinical trial in Tanzania was probably exaggerated by a fall in transmission during the trial.

Open Access | The malaria map-makers

Declan Butler

Nature News (23 Mar 2009), doi: 10.1038/news.2009.184, News

Images offer hope that the disease could be brought under control in most areas.

Open Access | Correspondence: Antimalarial Therapies in Children from Papua New Guinea

Price RN, Dorsey G, Nosten F, Davis TME, Karunajeewa HA, Mueller

N Engl J Med, Number 12, March 19th 2009, Volume 360:1254-1255

In their article on antimalarial combination therapies, Karunajeewa et al. (Dec. 11 issue)¹ conclude that artemether–lumefantrine has more favorable efficacy than dihydroartemisinin–piperaquine, even though fat was given with the treatment only in the artemether–lumefantrine group and there was no significant difference in the primary end point. Their per-protocol analysis with a high dropout rate from a small sample results in overestimation of the risk of treatment failure and wide 95% confidence intervals (6.4% to 20.0%). We reanalyzed data from 981 children younger than 5 years of age who were treated with dihydroartemisinin–piperaquine in seven clinical trials in Indonesia, Thailand, Uganda, and Burkina Faso.

Open Access | A World Malaria Map: Plasmodium falciparum Endemicity in 2007

Hay SI, Guerra CA, Gething PW, Patil AP, Tatem AJ, et al.

PLoS Med 6(3): e1000048

Efficient allocation of resources to intervene against malaria requires a detailed understanding of the contemporary spatial distribution of malaria risk. It is exactly 40 y since the last global map of malaria endemicity was published. This paper describes the generation of a new world map of Plasmodium falciparum malaria endemicity for the year 2007.

Open Access | C5a Enhances Dysregulated Inflammatory and Angiogenic Responses to Malaria In Vitro: Potential Implications for Placental Malaria

Conroy A, Serghides L, Finney C, Owino SO, Kumar S, et al.

PLoS ONE 4(3): e4953

Placental malaria (PM) is a leading cause of maternal and infant mortality. Although the accumulation of parasitized erythrocytes (PEs) and monocytes within the placenta is thought to contribute to the pathophysiology of PM, the molecular mechanisms

underlying PM remain unclear. Based on the hypothesis that excessive complement activation may contribute to PM, in particular generation of the potent inflammatory peptide C5a, we investigated the role of C5a in the pathogenesis of PM in vitro and in vivo.

Open Access | Serum Angiopoietin-1 and -2 Levels Discriminate Cerebral Malaria from Uncomplicated Malaria and Predict Clinical Outcome in African Children

Lovegrove FE, Tangpukdee N, Opoka RO, Lafferty EI, Rajwans N, et al.

PLoS ONE 4(3): e4912

Limited tools exist to identify which individuals infected with *Plasmodium falciparum* are at risk of developing serious complications such as cerebral malaria (CM). The objective of this study was to assess serum biomarkers that differentiate between CM and non-CM, with the long-term goal of developing a clinically informative prognostic test for severe malaria.

Open Access | Severe Plasmodium falciparum Malaria Is Associated with Circulating Ultra-Large von Willebrand Multimers and ADAMTS13 Inhibition

Larkin D, de Laat B, Jenkins PV, Bunn J, Craig AG, et al.

PLoS Pathog 5(3): e1000349

Plasmodium falciparum infection results in adhesion of infected erythrocytes to blood vessel endothelium, and acute endothelial cell activation, together with sequestration of platelets and leucocytes. We have previously shown that patients with severe infection or fulminant cerebral malaria have significantly increased circulatory levels of the adhesive glycoprotein von Willebrand factor (VWF) and its propeptide, both of which are indices of endothelial cell activation. In this prospective study of patients from Ghana with severe ($n = 20$) and cerebral ($n = 13$) *P. falciparum* malaria, we demonstrate that increased plasma VWF antigen (VWF:Ag) level is associated with disproportionately increased VWF function.

Synthesis and Antimalarial Activities of Cyclen 4-Aminoquinoline Analogs

M. O. Faruk Khan, Mark S. Levi, Babu L. Tekwani, Shabana I. Khan, Eiichi Kimura, and Ronald F. Borne

Antimicrob. Agents Chemother. April 2009 53: 1320-1324; April 1, 2009

In an attempt to augment the efficacy of 7-chloro 4-aminoquinoline analogs and also to overcome resistance to antimalarial agents, we synthesized three cyclen (1,4,7,10-tetraazacyclododecane) analogs of chloroquine [a bisquinoline derivative, 7-chloro-4-(1,4,7,10-tetraaza-cyclododec-1-yl)-quinoline HBr, and a 7-chloro-4-(1,4,7,10-tetraaza-cyclododec-1-yl)-quinoline-Zn²⁺ complex]. Overall, this article describes the discovery of a new class of cyclen 4-aminoquinoline analogs as potent antimalarial drugs.

Role of Known Molecular Markers of Resistance in the Antimalarial Potency of Piperaquine and Dihydroartemisinin In Vitro

Sant Muangnoicharoen, David J. Johnson, Sornchai Looareesuwan, Srivicha Krudsood, and Stephen A. Ward

Antimicrob. Agents Chemother. April 2009 53: 1362-1366; April 1, 2009

Using a range of laboratory-adapted and genetically modified *Plasmodium falciparum* parasite isolates, we investigated the interaction between dihydroartemisinin and piperaquine (PIP), the individual components of an artemisinin combination therapy currently under development, in addition to the role of known drug resistance genes in parasite susceptibility in vitro. Our data indicate that PIP sensitivity was not affected by *pfmdr1* sequence status, despite positive correlations between the structurally related compound amodiaquine and *pfmdr1* mutations in other studies. In contrast, neither the *pfcr* nor *pfmdr1* sequence status had any significant impact on susceptibility to dihydroartemisinin.

Pharmacokinetics of Hydroxychloroquine and Its Clinical Implications in Chemoprophylaxis against Malaria Caused by Plasmodium vivax

Hyeong-Seok Lim, Jeong-Soo Im, Joo-Youn Cho, Kyun-Seop Bae, Terry A. Klein, Joon-Sup Yeom, Tae-Seon Kim, Jae-Seon Choi, In-Jin Jang, and Jae-Won Park

Antimicrob. Agents Chemother. April 2009 53: 1468-1475; published ahead of print April 1, 2009

Hydroxychloroquine (HCQ) is an antimalarial drug used as chemoprophylaxis against malaria caused by *Plasmodium vivax* in the Republic of Korea Army (ROKA). In this study, we evaluated the pharmacokinetics (PK) of HCQ and its metabolites and the relationship between the PK of HCQ and the effect of treatment of HCQ on vivax malaria in South Koreans.

Plasmodium falciparum pfmdr1 Amplification, Mefloquine Resistance, and Parasite Fitness

Piyanuch Preechapornkul et al.

Antimicrob. Agents Chemother. April 2009 53: 1509-1515; published ahead of print April 1, 2009

Mefloquine is widely used in combination with artemisinin derivatives for the treatment of falciparum malaria. Mefloquine resistance in *Plasmodium falciparum* has been related to increased copy numbers of multidrug-resistant gene 1 (*pfmdr1*). We studied the ex vivo dynamics of *pfmdr1* gene amplification in culture-adapted *P. falciparum* in relation to mefloquine resistance and parasite fitness.

Plasmodium falciparum and Dihydrofolate Reductase I164L Mutations in Africa

Alisa P. Alker et al.

Antimicrob. Agents Chemother. April 2009 53: 1722-1723

No abstract available

Two Mosquito LRR Proteins Function as Complement Control Factors in the TEP1-Mediated Killing of Plasmodium

Malou Fraiture, Richard H.G. Baxter, Stefanie Steinert, Yogarany Chelliah, Cécile Frolet, Wilber Quispe-Tintaya, Jules A. Hoffmann, Stéphanie A. Blandin, Elena A. Levashina

Cell Host & Microbe, Volume 5, Issue 3, 19 March 2009, Pages 273-284

Plasmodium development within *Anopheles* mosquitoes is a vulnerable step in the parasite transmission cycle, and targeting this step represents a promising strategy for malaria control. The thioester-containing complement-like protein TEP1 and two leucine-rich repeat (LRR) proteins, LRIM1 and APL1, have been identified as major mosquito factors that regulate parasite loads. Here, we show that LRIM1 and APL1 are required for binding of TEP1 to parasites. RNAi silencing of the LRR-encoding genes results in deposition of TEP1 on *Anopheles* tissues, thereby depleting TEP1 from circulation in the hemolymph and impeding its binding to *Plasmodium*.

Organic Chemistry: Synthesis of exo-3-Amino-7-azabicyclo[2.2.1]heptanes as a Class of Malarial Aspartic Protease Inhibitors: Exploration of Two Binding Pockets

Martina Zürcher, Fraser Hof, Luzi Barandun, Andri Schütz, W. Bernd Schweizer, Solange Meyer, Daniel Bur, François Diederich

European Journal of Organic Chemistry, Volume 2009, Issue 11, Date: April 2009, Pages: 1707-1719

The increasing prevalence of drug-resistant strains of malaria-causing *Plasmodium* parasites necessitates the development of therapeutic agents that inhibit new biochemical targets. We herein describe the design, synthesis, and in vitro evaluation of a class of inhibitors that target the malarial aspartic proteases known as the plasmepsins.

Concentration and drug prices in the retail market for malaria treatment in rural Tanzania

Goodman C, Kachur SP, Abdulla S, Bloland P, Mills A.

Health Econ. 2009 Mar 19. [Epub ahead of print]

The impact of market concentration has been little studied in markets for ambulatory care in the developing world, where the retail sector often accounts for a high proportion of treatments. This study begins to address this gap through an analysis of the consumer market for malaria treatment in rural areas of three districts in Tanzania.

A single LC–tandem mass spectrometry method for the simultaneous determination of 14 antimalarial drugs and their metabolites in human plasma

E.M. Hodel, B. Zanolari, T. Mercier, J. Biollaz, J. Keiser, P. Olliaro, B. Genton, L.A.

Decosterd

Journal of Chromatography B, Volume 877, Issue 10, 1 April 2009, Pages 867-886

Among the various determinants of treatment response, the achievement of sufficient blood levels is essential for curing malaria. For helping us at improving our current understanding of antimalarial drugs pharmacokinetics, efficacy and toxicity, we have developed a liquid chromatography–tandem mass spectrometry method (LC–MS/MS) requiring 200 µl of plasma for the simultaneous determination of 14 antimalarial drugs and their metabolites which are the components of the current first-line combination treatments for malaria (artemether, artesunate, dihydroartemisinin, amodiaquine, N-desethyl-amodiaquine, lumefantrine, desbutyl-lumefantrine, piperaquine, pyronaridine, mefloquine, chloroquine, quinine, pyrimethamine and sulfadoxine).

Structure and Dynamics of Male Swarms of *Anopheles gambiae*

Manoukis, Nicholas C.; Diabate, Abdoulaye; Abdoulaye, Adamou; Diallo, Moussa; Dao, Adama; Yaro, Alpha S.; Ribeiro, José M. C.; Lehmann, Tovi

Journal of Medical Entomology, Volume 46, Number 2, March 2009 , pp. 227-235(9)

Mosquito swarms are poorly understood mating aggregations. In the malaria vector *Anopheles gambiae* Giles, they are known to depend on environmental conditions, such as the presence of a marker on the ground, and they may be highly relevant to reproductive isolation. We present quantitative measurements of individual *An. gambiae* positions within swarms from Donéguébougou, Mali, estimated by stereoscopic video image analysis.

Effects of Different Pyrethroids on Landing Behavior of Female *Aedes aegypti*, *Anopheles quadrimaculatus*, and *Culex quinquefasciatus* Mosquitoes (Diptera: Culicidae)

Cooperband, Miriam F.; Allan, Sandra A.

Journal of Medical Entomology, Volume 46, Number 2, March 2009 , pp. 292-306(15)

Mosquitoes from three genera, *Aedes aegypti* L., *Anopheles quadrimaculatus* Say, and *Culex quinquefasciatus* Say, were tested for facultative landing and resting behavior on pyrethroid-treated surfaces paired with adjacent untreated surfaces. The three pyrethroids tested were bifenthrin, deltamethrin, and lambda-cyhalothrin.

Desiccation Resistance Among Subpopulations of *Anopheles gambiae* s.s. From Selinkenyi, Mali

Lee, Yoosook; Meneses, Claudio R.; Fofana, Abdrahamane; Lanzaro, Gregory C.

Journal of Medical Entomology, Volume 46, Number 2, March 2009 , pp. 316-320(5)

Certain forms of *Anopheles gambiae* s.s. actively maintain malaria transmission in the driest areas and months of the year because of considerable drought tolerance. We monitored desiccation resistance of F1 offspring of both the M and S forms of field-collected *An. gambiae* s.s.

Field Evaluation of Olyset Nets: A Long-Lasting Insecticidal Net Against Malaria Vectors *Anopheles culicifacies* and *Anopheles fluviatilis* in a Hyperendemic Tribal Area of Orissa, India

Sharma, S. K.; Upadhyay, A. K.; Haque, M. A.; Tyagi, P. K.; Mohanty, S. S.; Raghavendra, K.; Dash, A. P.

Journal of Medical Entomology, Volume 46, Number 2, March 2009 , pp. 342-350(9)

A village-scale trial was conducted on the efficacy of Olyset nets: a long-lasting insecticidal net (LLIN) factory treated with 2% wt:wt permethrin against malaria vectors *Anopheles culicifacies* Giles and *Anopheles fluviatilis* James, in Sundargarh District, Orissa, India. This study showed that Olyset nets are an effective personal protection tool that can be used in a community-based intervention program.

Effects of concurrent administration of nevirapine on the disposition of quinine in healthy volunteers

Soyinka JO, Onyeji CO, Omoruyi SI, Owolabi AR, Sarma PV, Cook JM.

J Pharm Pharmacol. 2009 Apr;61(4):439-43

Nevirapine and quinine are likely to be administered concurrently in the treatment of patients with HIV and malaria. Both drugs are metabolised to a significant extent by cytochrome P450 (CYP)3A4 and nevirapine is also an inducer of this enzyme. This study therefore evaluated the effect of nevirapine on the pharmacokinetics of quinine.

Clinical Microbiology: Knowledge, Attitudes, and Practices Among Foreign Backpackers Toward Malaria Risk in Southeast Asia

Watcharapong Piyaphanee, Yupaporn Wattanagoon, Udomsak Silachamroon, Chayasin Mansanguan, Pongdej Wichianprasat, Eric Walke

Journal of Travel Medicine, Volume 16, Issue 2, Date: March/April 2009, Pages: 101-106

This study aimed to assess the knowledge, attitude, and practices among foreign backpackers toward malaria risk in Southeast Asia. Although most backpackers perceive the risk of malaria in Southeast Asia, they have some misunderstandings about malaria and tend to comply poorly with mosquito bite prevention and chemoprophylactic strategies.

Epidemiology of Imported Malaria in Qatar

Mohamed Ghaith Al-Kuwari

Journal of Travel Medicine, Volume 16 Issue 2, Pages 119 - 122

This study estimated the annual incidence of imported malaria in Qatar from 1997 to 2006 and described the epidemiological features of malaria from 2004 to 2006. Imported malaria reported in Qatar has shown an increase in the past 2 years after a long period of constant reduction, and the people most affected were adult male migrants from endemic countries. This group should be targeted by malaria prevention programs.

Brief Communication: A Case of Myocarditis Associated With *Plasmodium vivax* Malaria

Soon Ae Kim, Eu Suk Kim, Moo Yong Rhee, Sang Il Choi, Hee Jin Huh, Seok Lae Chae

Journal of Travel Medicine, Volume 16 Issue 2, Pages 138 - 140

Cardiac complications in malaria have been infrequently associated with *Plasmodium falciparum* infections. However, myocarditis associated with *Plasmodium vivax* malaria has not been reported in the literature. We observed an unusual case of vivax malaria that was complicated by myocarditis.

The reticulocyte binding-like proteins of *P. knowlesi* locate to the micronemes of merozoites and define two new members of this invasion ligand family

Esmeralda V.S. Meyer, Amma A. Semanya, Daniel M.N. Okenu, Anton R. Dluzewski, Lawrence H. Bannister, John W. Barnwell, Mary R. Galinski

Molecular and Biochemical Parasitology, Volume 165, Issue 2, June 2009, Pages 111-121

Members of the reticulocyte binding-like protein (RBL) family are merozoite-expressed proteins hypothesized to be essential for effective invasion of host erythrocytes. Proteins of the RBL family were first defined as merozoite invasion ligands in *Plasmodium vivax*, and subsequently in *Plasmodium falciparum* and other malaria parasite species. Comparative studies are providing insights regarding the complexity and evolution of this family and the existence of possible functionally alternative members. Here, we report the experimental and bioinformatic characterization of two new *rbl* genes in the simian malaria parasite species *Plasmodium knowlesi*.

Probing the multifactorial basis of *Plasmodium falciparum* quinine resistance: Evidence for a strain-specific contribution of the sodium-proton exchanger PfNHE

Louis J. Nkrumah, Paul M. Riegelhaupt, Pedro Moura, David J. Johnson, Jigar Patel, Karen Hayton, Michael T. Ferdig, Thomas E. Wellems, Myles H. Akabas, David A. Fidock
Molecular and Biochemical Parasitology, Volume 165, Issue 2, June 2009, Pages 122-131
Quinine (QN) continues to be an important treatment option for severe malaria, however resistance to this drug has emerged in field isolates of the etiologic agent *Plasmodium falciparum*. Quantitative trait loci investigations of QN resistance have mapped three loci of this complex trait. Two coincide with *pfcr* and *pfmdr1*, involved in resistance to chloroquine (CQ) and other quinoline-based antimalarials. A third locus on chromosome 13 contains the sodium-proton exchanger (*pfneh*) gene. Previous studies have associated *pfneh* polymorphisms with reduced QN sensitivity in culture-adapted field isolates. Here, we provide direct evidence supporting the hypothesis that *pfneh* contributes to QN resistance.

The C-terminal domain of *Plasmodium falciparum* merozoite surface protein 3 self-assembles into α -helical coiled coil tetramer

Claire Gondeau, Giampietro Corradin, Frédéric Heitz, Christian Le Peuch, Andrea Balbo, Peter Schuck, Andrey V. Kajava
Molecular and Biochemical Parasitology, Volume 165, Issue 2, June 2009, Pages 153-161
Proteins located on the surface of the pathogenic malaria parasite *Plasmodium falciparum* are objects of intensive studies due to their important role in the invasion of human cells and the accessibility to host antibodies thus making these proteins attractive vaccine candidates. One of these proteins, merozoite surface protein 3 (MSP3) represents a leading component among vaccine candidates; however, little is known about its structure and function. Our biophysical studies suggest that the 40 residue C-terminal domain of MSP3 protein self-assembles into a four-stranded α -helical coiled coil structure where α -helices are packed "side-by-side".

Complex inheritance of the plasmodial surface anion channel in a *Plasmodium falciparum* genetic cross

Abdulnaser Alkhalil, Ajay D. Pillai, Abdullah A. B. Bokhari, Akhil B. Vaidya and Sanjay A. Desai
Molecular Microbiology, Published Online: 6 Mar 2009
Human erythrocytes infected with the malaria parasite *Plasmodium falciparum* have increased permeabilities to many solutes. The plasmodial surface anion channel (PSAC) may mediate these changes. Despite good understanding of the biochemical and biophysical properties, the genetic basis of PSAC activity remains unknown. Functional polymorphisms in laboratory isolates and two mutants generated by in vitro selection implicate a parasite-encoded channel, although parasite-induced modifications of endogenous channels have not been formally excluded. Here, we identified stable differences in furosemide efficacy against PSAC activity induced by HB3 and 3D7A parasites.

Microbiology and Virology: Fatty acid acylation regulates trafficking of the unusual *Plasmodium falciparum* calpain to the nucleolus

Ilaria Russo, Anna Oksman, Daniel E. Goldberg

Molecular Microbiology, Volume 72, Issue 1, Date: April 2009, Pages: 229-245

Our data show that the nuclear localization sequence is an active nuclear import motif that contains an embedded signal conferring nucleolar localization on various chimeras. The N-terminus is myristoylated at Gly2 and palmitoylated at Cys3 and Cys22. Palmitoylation status has an important role in dictating *P. falciparum* calpain localization. The targeting signals function in mammalian cells as well as in the parasite. *P. falciparum* calpain is a unique nucleolar protein with an interesting mechanism of targeting.

News and Views: 50 & 100 years ago

Nature 458, 291 - 291 (19 Mar 2009)

Prof. Osler directs attention to the useful work which is being done by the Italian Society for the Study of Malaria, founded ten years ago, for the prevention of malarial diseases.

Technology: Flower trap kills mosquitoes

The New Scientist, Volume 201, Issue 2700, 18 March 2009, Page 15

A colourful trap designed to attract and kill deadly mosquitoes is being tested in Puerto Rico.

New malaria parasites of the subgenus *Novyella* in African rainforest birds, with remarks on their high prevalence, classification and diagnostics

Gediminas Valkiūnas, Tatjana A. Iezhova, Claire Loiseau, Thomas B. Smith, Ravinder N. M. Sehgal

Parasitology Research, Online First

It is concluded that a multi-genome phylogeny is needed before revising the current subgeneric classification of *Plasmodium*. We supported a hypothesis by Hellgren, Križanauskienė, Valkiūnas, Bensch (J Parasitol 93:889–896, 2007), according to which, haemosporidian species with a genetic differentiation of over 5% in mitochondrial cyt b gene are expected to be morphologically differentiated. This study emphasises the importance of employing both PCR-based and microscopic methods in taxonomic, ecological and evolutionary investigations of avian haemosporidian parasites.

Patterns of infection of the lizard malaria parasite, *Plasmodium floridense*, in invasive brown anoles (*Anolis sagrei*) in Southwestern Florida

Susan L. Perkins, Allison S. Kerwin, Anna D. Rothschild

Parasitology Research, Online First

Plasmodium floridense is a saurian malaria parasite common in the *Anolis* lizards of the northern Caribbean islands and the SE USA. In the latter area, it is found in two native lizards (*Sceloporus undulatus* and *Anolis carolinensis*) and in the introduced *Anolis sagrei*, which is native to Cuba. We measured parasite prevalence and parasitemia in the introduced anole at a single site in North Port, Florida over 5 years.

Distillery: *Plasmodium falciparum*: protein farnesyl transferase (PFT)

SciBX: Science-Business eXchange 2, (12 Mar 2009), doi: 10.1038/scibx.2009.409,

Distillery: Therapeutics

An SAR study identified a series of PFT inhibitors based on an ethylenediamine scaffold that could be useful for treating malaria. Further details on the research, next steps and licensing status are discussed in the article

Review: Ecological and evolutionary determinants of host species choice in mosquito vectors

Issa N. Lyimo, Heather M. Ferguson

Trends in Parasitology, Volume 25, Issue 4, April 2009, Pages 189-196

Insects exhibit diverse resource-exploitation strategies, including predation, herbivory and parasitism. The ecological and evolutionary factors that influence the resource selection of some insects (e.g. herbivores) have been extensively investigated because of

their agricultural importance. By contrast, there has been little investigation of the selective forces that mediate host choice in haematophagous insects, despite their importance as vectors of disease. Here, we review potential determinants of host species choice in mosquitoes, the most important insect vectors of human disease, and discuss whether these could be manipulated to yield new disease-control strategies based on vector behavioural change.

Clinical Microbiology: Control of pyrethroid-resistant *Anopheles gambiae* and *Culex quinquefasciatus* mosquitoes with chlorfenapyr in Benin

Raphael N'Guessan, Pelagie Boko, Abiba Odjo, Bart Knols, Martin Akogbeto, Mark Rowland

Tropical Medicine & International Health, Volume 14, Issue 4, Date: April 2009, Pages: 389-395

Objective: To compare the efficacy of chlorfenapyr applied on mosquito nets and as an indoor residual spray against populations of *Anopheles gambiae* and *Culex quinquefasciatus* in an area of Benin that shows problematic levels of pyrethroid resistance. **Conclusion:** Chlorfenapyr has the potential to control pyrethroid resistant populations of *A. gambiae*. There is a need to develop long-lasting formulations of chlorfenapyr to prolong its residual life on nets and sprayed surfaces. On nets it could be combined with a contact irritant pyrethroid to give improved protection against mosquito biting while killing pyrethroid-resistant mosquitoes that come into contact with the net.

Clinical Microbiology: Distribution of insensitive acetylcholinesterase (ace-1R) in *Anopheles gambiae* s.l. populations from Burkina Faso (West Africa)

K. R. Dabiré, A. Diabaté, M. Namontougou, L. Djogbenou, P. Kengne, F. Simard, C. Bass, T. Baldet

Tropical Medicine & International Health, Volume 14, Issue 4, Date: April 2009, Pages: 396-403

Objective: To investigate through countrywide sampling at 20 localities across the three different agro-climatic zones of Burkina Faso, the distribution of the acetylcholinesterase insensitive mutation ace-1R, which confers resistance to organophosphates (OP) and carbamates (CM) insecticides in *An. gambiae* s.l. **Conclusions:** These results have special significance as OP and CM insecticides have been proposed as alternatives or additions to pyrethroids which are currently used exclusively in many vector control programmes.

Training

Special Programme for Research & Training
in Tropical Diseases (TDR) sponsored by
UNICEF/UNDP/World Bank/WHO



TDR Clinical Research & Development Fellowships^(*)

supported by the Bill & Melinda Gates Foundation

(*) TDR Clinical R&D career development fellowships provide a generous monthly stipend, travel, health insurance, computer, alumni membership and professional meeting participation.

TDR invites researchers, living and working in the developing countries, to apply for one of ten (10) 12-month career development fellowships on Clinical Research & Development for diagnostics, drugs or vaccines at selected pharmaceutical companies and related institutions globally.

The programme will train individuals with pharma partners in order to develop specialized skills not readily taught in academic centres, including R&D project management, regulatory compliance and good practices. Upon completing their fellowships, the

individuals will assume a leading role in the global effort on R&D for neglected infectious diseases.

Applications are requested from developing country nationals working or involved in the Ministries of Health, academic or research institutions. Preference will be given to candidates under 35 years holding an MD or PhD degree with clinical and research experience in infectious diseases. Candidates will be computer literate and able to demonstrate fluency in English. Other languages, especially French, are an asset.

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<http://www.who.int/tdr/svc/grants/calls/clinical-research-fellowships>

For further information: Steven Wayling, WHO-TDR Research Networks Manager
e-mail: **waylings@who.int**

Don't forget to mention **MalariaWorld** when replying to this advert.

News

Africa

25 March 2009, ANGOP

Angola: Health Ministry Foresees to Reduce Malaria Cases

The Health Ministry (Minsa) intends to decrease from 15,000 new cases of malaria registered every year to 12,000 for 100,000 people, until the end of the year, as it is referred on the national plan for 2009, presented Wednesday at the 20th ordinary council, that is running in Huambo city.

25 March 2009, ANGOP

Angola: Chevron And Partners Donate One Thousand Mosquito Nets

Chevron-Cabinda Gulf Oil Company Limited (CABGOC) and its partners of Bloc 0 (Sonangol E. P., Total Petroleum Angola Limited and ENI Angola Production B.V.) donated on Tuesday, in Luanda, one thousand insecticide-treated mosquito nets to Luanda Sanatorium Hospital.

24 March 2009, Ghanaian Chronicle

Ghana: GHS Calls for Public Support to Fight Malaria

The Brong-Ahafo Regional Health Director, Dr. Aaron Offei, has called on Ghanaians to help curb the increasing rate of malaria because the Health services alone can not improve the health status of the people of this country.

24 March 2009, AIM

Mozambique: Cholera Worsening, But Success Against Measles, Leprosy and Malaria

Since the start of this year, 140 people have died of cholera in Mozambique, according to the health authorities.

23 March 2009, Walta Information Center

Ethiopia: Over 84000 people protected from malaria in Harari state

More than 84,000 people have been protected from malaria in Harari state following the distribution of bed nets and spraying of anti-malaria chemicals carried out in the first half of the budget year, state health bureau said.

21 March 2009, Joy Online

Ghana: Brong Ahafo records less cases of malaria in 2008

The rate of malaria prevalence in the Brong Ahafo region reduced by 7.5 percent in 2008, compared to the previous year, regional coordinator for the control of the disease has said.

20 March 2009, Ghana News

Ghana: MTN signs Malaria eradication agreement with Gates Foundation

MTN Group has signed an agreement with the Bill and Melinda Gates Foundation for the provision of four million mosquito bed nets to malaria prone areas in Africa by the close of 2010.

19 March 2009, IPPmedia

United Republic of Tanzania: Arusha remandee Lissu died of malaria, new postmortem shows

A fresh post-mortem examination conducted at the Kilimanjaro Christian Medical Centre (KCMC) on Juma Lissu`s body indicates that the remandee died from malaria, contrary to an earlier report from Arusha regional hospital which indicated that he had died from lung problems.

18 March 2009, Joy Online

Ghana: Ghana needs effective collaboration in malaria campaign

Mr. Anthony Ofori, Brong Ahafo Regional Co-coordinator of Malaria Control, on Tuesday called for effective collaboration between non-governmental organisations (NGOs), corporate bodies and the health authorities in the campaign against malaria in the country.

Asia

25 March 2009, Times of India

India: Mosquito menace hits city

People in this part of Ahmedabad have got used to living by the side of a gutter. Residents of Shilaj, Ghuma, Manipur, Ghodhavi and surrounding areas have been tormented by what they call monster mosquitoes' for the last three years now.

24 March 2009, Reuters India

India: Malaria map shows where to target the disease

Eliminating malaria in many parts of the world where risk of the disease is high may be less difficult than previously thought, international researchers said on Tuesday.

24 March 2009, Xinhua

China: Interview: Africa's first malaria research center to open in Cameroon

Cameroon is bracing the opening of a China-funded malaria research center in the coming days, the first of a series to be set up in Africa.

Americas

24 March 2009, Prensa Latina

Cuba: New Atlas on Malaria Risk Published

A new atlas about the risk of malaria in the world was published in the magazine Plus Medicine, available throughout the Malaria Atlas Project (MAP).

24 March 2009, Bloomberg

USA: Biogen Tests Malaria Drug as Cure for Tysabri Brain Infection

Biogen Idec Inc. may have found a treatment for the deadly brain infections that have been tied to use of its multiple sclerosis drug Tysabri, the biotechnology company's fastest-growing product.

23 March 2009, Business Wire (press release)

USA: VGX Pharmaceuticals Announces Agreement With the PATH Malaria Vaccine Initiative

VGX Pharmaceuticals to evaluate pDNA delivered via electroporation as a vaccine platform for Plasmodium antigens.

23 March 2009, Business Wire (press release)

USA: Antimalaria Data on PolyMedix Antimicrobial Compounds Presented at Malaria Keystone Conference

PolyMedix, Inc., an emerging biotechnology company developing acute care products for infectious diseases and acute cardiovascular disorders, announced that data on its defensin-mimetic antimicrobial compounds is being presented at the Malaria Keystone Conference: Drug Discovery for Protozoan Parasites in Breckenridge, Colorado.

23 March 2009, Science Daily (press release)

USA: First Automated Carbohydrate 'Assembly Line' Opens Door To New Field Of Medicine

Scientists from Germany have reported a major advance toward opening the doors of a carbohydrate-based medicine chest for the 21st century. Much more than just potatoes and pasta, these carbohydrates may form the basis of revolutionary new vaccines and drugs to battle malaria, HIV, and a bevy of other diseases.

23 March 2009, Vanguard

USA: Nigeria: A Case Against Malaria

If most bus-stop parliamentarians in Lagos are to have their way, government, whether state or Federal, should declare a state of emergency against malaria fever.

22 March 2009, Utica Observer Dispatch

USA: Lee Center man hopes mosquito traps help prevent malaria

A local businessman hopes to use one of his latest products, a mosquito trap, to help prevent the spread of malaria in African countries.

20 March 2009, Voice of America

USA: Ethiopia Prepares For Battle With Malaria

Ethiopia is gearing up for an epic battle with malaria, possibly later this year. The stakes are high, with international aid agencies betting millions of dollars that the Horn of Africa's largest country can wipe out a disease that kills at least a million Africans every year.

20 March 2009, Genetic Engineering News (press release)

USA: Scientists Figure Out Why Malaria-Infected RBCs Adhere to the Endothelium of Small Blood Vessels

An international group of researchers have identified a pathway that may contribute to the high mortality associated with severe malaria in sub-Saharan African children. They found that severe *P. falciparum* infection causes disruption of the endothelium, resulting in the release of large amounts of an adhesive protein, which traps infected erythrocytes. Moreover, this protein cannot be inactivated due to a concurrent decrease in plasma levels of its cleaving enzyme.

19 March 2009, SmartBrief

USA: Researchers to use satellite, digital X-rays in malaria trial

GlaxoSmithKline researchers will use satellite technology to transmit digital X-rays and other patient data from a trial on a malaria vaccine involving 16,000 children in seven African nations.

18 March 2009, Reuters

USA: Merck gives malaria drug to non-profit group

Merck & Co is donating an experimental anti-malarial medicine to a not-for-profit research organization in the latest example of drugmakers stepping up efforts to address health issues in poor countries.

Europe

24 March 2009, Medical News Today

UK: Comprehensive Map Of Global Malaria Endemicity - A Key Resource For Malaria Control And Elimination

Using data from nearly 8000 local surveys of malaria parasite infection rates, an international team of researchers has built a global map showing the proportion of the population infected with the parasite *Plasmodium falciparum* at locations throughout the globe.

24 March 2009, Goal.com

Switzerland: Malaria Shuts Out Zambia Defender Hichani Himonde From World Cup Clash

A bout of malaria will keep Zambia defender Hichani Himonde from Sunday's clash against Egypt.

23 March 2009, Medical News Today

UK: Cherry-Flavoured Malaria Drug Launched For Children In Africa - UK's Department For International Development Funds Innovative Anti-Malaria Research

A new child-friendly malaria drug which will be distributed in Africa, where a child dies every 30 seconds from malaria, is to be launched in the UK on Monday 23 March 2009.

23 March 2009, Afrik.com

France: Malaria: Scientific breakthrough to wipe off malaria

Researchers at the Johns Hopkins Bloomberg School of Public Health have for the first time identified a molecular pathway that triggers an immune response in multiple mosquito species capable of stopping the development of *Plasmodium falciparum* — the parasite that causes malaria in humans.

23 March 2009, TropIKA

Switzerland: Ethiopia will expand malaria control efforts

Ethiopia's Health Minister Dr Twodros Adhanon says Ethiopia has been placed on high alert for a major malaria outbreak.

22 March 2009, Medical News Today

UK: Malaria Vector Control Method Using Native Larvivorous Fish That Mimic The Life Cycle Of Malarial Mosquitoes

Prevention of disease transmission by malarial mosquitoes and other insects requires a multifaceted approach, which includes killing mosquitoes with pesticides and larvicides.

22 March 2009, Medical News Today

UK: New Findings Highlight The Role Of Endothelial Cell Activation In Children With Cerebral Malaria

Researchers have identified a novel pathway that may contribute to the high mortality associated with severe malaria in sub-Saharan African children. The study, published March 20 in the open-access journal PLoS Pathogens, reports that severe Plasmodium falciparum infection results in disruption of the endothelium, causing release of ultra-large von Willebrand factor (VWF) protein. Together with reduced levels of VWF-specific cleaving enzyme ADAMTS13, this finding may contribute to our knowledge of the pathophysiology of malaria.

19 March 2009, TropIKA

Switzerland: Pharma giant hands over potential new antimalarial to not-for-profit group

The pharmaceutical giant Merck & Co has granted the Medicines for Malaria Venture (MMV) an exclusive, royalty-free licence to pursue development of a potential new drug for the treatment of malaria in malaria-endemic countries.

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